

Santhera Receives Negative CHMP Opinion on Appeal for Authorization of Raxone® in Duchenne Muscular Dystrophy

Liestal, Switzerland, January 26, 2018 – Santhera Pharmaceuticals (SIX: SANN) announces that the Committee for Medicinal Products for Human Use (CHMP) of the European Medicines Agency (EMA) maintained its negative opinion on the Type II extension application for Raxone® (idebenone) in Duchenne muscular dystrophy (DMD) following a re-examination procedure.

The CHMP concluded that an approval for Raxone in DMD, applied as a Type II variation of the existing marketing authorization, cannot be granted at the present time based on the current existing evidence. Although the positive outcome of the Phase III DELOS trial was acknowledged, the CHMP has invited Santhera to present additional data to further link the observed treatment effects on respiratory function outcomes to patient benefit.

Respiratory decline is one of the leading causes of death in patients with DMD and there is currently no approved treatment. Santhera remains fully committed to addressing this unmet need and is convinced of the treatment benefits of Raxone in DMD. Santhera intends to collect further evidence to strengthen the clinical data package for Raxone in preparation of a refiling of a Marketing Authorization Application (MAA) in Europe.

Santhera will continue working with regulatory authorities to bring this treatment option to patients as quickly as possible. The intended indication for Raxone is to slow the decline of respiratory function in patients with DMD who are currently not taking glucocorticoids. The indication would include patients in whom glucocorticoid treatment is no longer tolerated or is considered inadvisable.

“Data from the Phase III DELOS trial demonstrated statistically significant and clinically relevant evidence that Raxone slows the decline of respiratory function, and reduces the risk of bronchopulmonary complications and hospitalization in patients with DMD not using glucocorticoids. The CHMP acknowledged the unmet medical need in this patient population,” said **Thomas Meier**, PhD, CEO of Santhera. “We are very grateful to the DMD community, patients, their caregivers and treating doctors, for their relentless support. Santhera remains fully committed to realizing the potential of Raxone in treating patients with DMD through its clinical trial program and disease awareness efforts in close cooperation with the medical community and patient organizations.”

Jon Hastie, PhD and CEO of DMD Pathfinders, a user led organization of adults with Duchenne which provides peer support and advice for others living with the condition commented on today’s news: “The news about Raxone being given a negative opinion is disappointing for individuals with DMD, particularly teenagers and adults experiencing respiratory decline. The need for assisted ventilation and the likelihood of chest infections and consequent emergency hospital admissions is a source of constant anxiety and has a significant burden on our lives. – There really is an urgent need to find a treatment to slow the decline in respiratory function in individuals who do not take steroids as there is no other treatment option available. I’m glad that Santhera will continue in their efforts to make Raxone available to patients.”

“Across Europe about half of patients with DMD aged 10-20 years old are not able to take steroids or have stopped because of side effects. These patients are currently left with no treatment option to slow the progressive decline in their respiratory function. We will continue supporting Santhera in obtaining additional evidence required to have this medicine approved for this older group of DMD patients,” said **Thomas Voit**, MD and Professor of pediatrics at the Great Ormond Street Hospital for Children and University College London (London, UK).

The MAA for Raxone in DMD was filed as a Type II Variation of the existing marketing authorization for Leber’s hereditary optic neuropathy (LHON), and is based on data from Santhera’s Phase II DELPHI study and the successful pivotal Phase III DELOS study, the latter in patients not taking concomitant glucocorticoids. These data demonstrated a statistically significant and clinically relevant outcome for Raxone in slowing the loss of respiratory function compared to placebo. The results of the Phase III DELOS study were published in several peer-reviewed journals: Buyse et al., *The Lancet* 2015, 385:1748-1757; McDonald et al., *Neuromuscular Disorders* 2016, 26:473-480; Buyse et al., *Pediatric Pulmonology* 2017, 52:580-515; Mayer et al., *Journal of Neuromuscular Diseases* 2017, 4:189-198; Meier et al., *Neuromuscular Disorders* 2017, 27:307-314.

In light of the CHMP’s opinion, Santhera has withdrawn the corresponding regulatory application in Switzerland with the intention to refile at a later stage.

Conference call:

An investor conference call with Thomas Meier, PhD, CEO of Santhera, to discuss the CHMP decision will be held today, January 26, 2018, at 14:00 hrs CET. Dial-in participants are invited to call one of the following numbers about 10 minutes before the conference call is due to start.

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About Duchenne Muscular Dystrophy

DMD is one of the most common and devastating types of muscle degeneration and leads to progressive muscle weakness starting at an early age. DMD is a genetic, degenerative disease that occurs almost exclusively in males with an incidence of up to 1 in 3,500 live male births worldwide.

About Raxone® (Idebenone) in Duchenne Muscular Dystrophy

DMD is characterized by a loss of the protein dystrophin, leading to cell damage, impaired calcium homeostasis, elevated oxidative stress and reduced energy production in muscle cells. This results in progressive muscle weakness, muscle wasting, early morbidity and mortality due to respiratory failure.

Idebenone is a synthetic short-chain benzoquinone and a cofactor for the enzyme NAD(P)H:quinone oxidoreductase (NQO1) capable of stimulating mitochondrial electron transport, reducing and scavenging reactive oxygen species (ROS) and supplementing cellular energy levels.

DELOS was a phase III, double-blind, placebo-controlled 52-week study which randomized 64 patients, not taking concomitant glucocorticoids, to receive either idebenone (900 mg/day) or matching placebo. The study met its primary endpoint, the change from baseline in Peak Expiratory Flow (PEF), which demonstrated that idebenone can slow the loss of respiratory function.

About Santhera

Santhera Pharmaceuticals (SIX: SANN) is a Swiss specialty pharmaceutical company focused on the development and commercialization of innovative pharmaceutical products for the treatment of orphan mitochondrial and neuromuscular diseases. Santhera's lead product Raxone® (idebenone) is authorized in the European Union, Norway, Iceland, Liechtenstein and Israel for the treatment of Leber's hereditary optic neuropathy (LHON). Santhera is currently conducting the Phase III SIDEROS trial with Raxone® in patients with Duchenne muscular dystrophy (DMD) in respiratory function decline. In collaboration with the U.S. National Institute of Neurological Disorders and Stroke (NINDS) Santhera is developing Raxone® in a third indication, primary progressive multiple sclerosis (PPMS), and another product – omigapil – for congenital muscular dystrophy (CMD), both also areas of high unmet medical need. For further information, please visit the Company's website www.santhera.com.

Raxone® is a trademark of Santhera Pharmaceuticals.

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